# CAREER TRAINING FOR AGRICULTURE

A Report to the Committee on Career Training for Agriculture, of the Department of Agriculture, Dr. W. W. Stockberger, Chairman, by Dr. Carl F. Taeusch, Executive Secretary.

The United States Department of Agriculture has a staff of some 63,000 persons; of this number, some 5,000 of the Washington staff are administrative, scientific and technical workers. The State colleges of agriculture and field workers would add many thousands more to this impressive total: there are some 8,500 staff members in the various agricultural colleges; and there are some 7,800 Extension workers scattered throughout the country, who are vested with a considerable amount of administrative responsibilities. The mere statement of these facts alone shows that there is a tremendous field here open to young men and women to exercise their faculties in agricultural activities that go far beyond guiding the plow handle or churning butter. And the question may well be raised. What is being done by our educational institutions and the organization of our agricultural activities to develop and train young people to assume the burden of this responsibility of agricultural administration?

As an approach to this problem, a survey was made of the actual training of some 1,500 technical and administrative staff members of the Department, and of the curricula of the 51 agricultural colleges of the country. A similar survey of the 7,800 members of the field staff of Extension Service is now being made. It may be that the committee on Land Grant Colleges and Universities may at some later date make a similar survey of the teaching and research staff members of the agricultural colleges.

## The Actual Training of 1000 Staff Members of the Department of Agriculture

We began this inquiry by asking what, as a matter of fact, has been the academic training of those who are now engaged in technical and administrative work in the Department of Agriculture. Some 1500 members of the Washington staff of the Department were asked this question, and the 1,000 who replied, including some 50 women, afford us a fair sample of the situation. One-third of these people first entered the Department since 1930, one-fourth first entered in the decade, 1920-29, and another one-fourth in that of 1910-19; 137 first entered in the decade 1900-09, and 20 have been in the Department since prior to 1900. In a sense, this distribution affords some basis for discovering trends in educational preparation for a career in the Department of Agriculture. But the increase in Department personnel in recent years has been relatively greater in bureaus such as the Agricultural Adjustment Administration and the Bureau of Agricultural Economics, where the qualifications are more in the field of economics and other social studies, rather than in the field of the natural or applied agricultural sciences. Therefore, the more recent drafting of personnel from the liberal-arts colleges and

from those persons who have had a relatively large amount of work in social fields -- which was disclosed as a fact by the survey -- may be interpreted in the light of the recently expanding functions of the Department, and not necessarily as an index of changing standards of admission to the older, scientific, bureaus of the Department.

Even so, the analysis of these replies will disclose results that may surprise many people who think that agricultural colleges alone train the bulk of the scientific and technical workers of the Department. Of the 1,000 persons whose replies were tabulated, less than one-fourth had their training in the 22 separate agricultural colleges of the country; and less than one-third had their training in the 29 universities which have agricultural colleges affiliated with them. Almost one-half had their training in colleges and universities unaffiliated with an agricultural college; the percentage, in the past four decades, having been successively 42.5, 44.5, 42.0 and 52.5 percent. When we examine certain groups of bureaus with closely related functions, more analytical observations can be made. Thus, we find that the group of Department bureaus consisting of Engineering, Public Roads, Forestry and the Weather Bureau has had the highest percentage of non-agricultural graduates on their staffs; that the average percentage has been 54, but that this has been declining in the four successive decades; and that the older men of the Weather Bureau were recruited largely from non-agricultural colleges, but with schools of engineering and of forestry being listed as non-agricultural. The next highest average percentage (49) of non-agricultural graduates is to be found in the bureaus of Chemistry and Soils, and of Soil Conservation Service, and this percentage has been increasing in recent years. The percentage of non-agricultural graduates in the group of bureaus including AAA, BAE and the Office of the Secretary and the Solicitor's Office, has been approximately 46, with a considerable increase in this percentage as well as of the absolute number of staff members in recent years. Of the older bureaus of the Department, the group consisting of Plant Industry, Entomology and Plant Quarantine, and Food and Drug, reported that 45 percent of their staffs were non-agricultural college graduates; for the three previous decades, this percentage had successively risen considerably, but during the last decade it declined, as did also the number of staff members who replied to the questionnaire. The group of bureaus including Animal Industry, Dairy Industry, and Biological Survey, reported only 35 percent of their staffs as graduates of non-agricultural colleges, with no appreciable trend observable. These observations would warrant the statement that the general increase in number as well as in percentage of non-agricultural college graduates who join the Department staff, is not confined solely to the bureaus which represent the expanding functions of the Department in recent years. For a considerable length of time the Department has been recruiting approximately one-half of its staff members from non-agricultural colleges and universities.

Although it might be assumed that staff members of the Department who were graduated from universities which included agricultural colleges, did graduate from those colleges, this may not be the case, and the data

were not analyzed to that extent. Even if it were the case, this would not affect the observations already made above regarding the non-agricultural college sources of the staff members of the Department. By inspection it was apparent that some graduates of State universities did not attend the agricultural college affiliated with them. But of more significance are the percentage trends of graduates from the State Universities, including agricultural colleges, and of graduates from the separate agricultural colleges; these figures reflect the relatively growing importance of the State universities in recent years in supplying the personnel of the Department. Here we find that the 29 universities which include colleges of agriculture supplied approximately 30 percent of the staff members of the Department who replied to the questionnaire, and that this percentage has been practically constant throughout the four decades; the latter factor is especially significant in view of the increase in succeeding decades in the absolute number of persons entering the Department. The 22 separate agricultural colleges, on the other hand, although they supplied approximately 25 percent of these Department staff members during the first three decades, furnished only 17 percent during the last period; and this decline in numbers of persons, as well as in percentage, occurred significantly in a period when the number of Department staff members was increasing. Just what caused this decline, absolutely as well as relatively, is an interesting question. It may be that the separate agricultural colleges are not putting sufficient emphasis on certain non-technical courses which would recognize, and prepare their students for, the broader functions now being performed by the Department of Agriculture; and that the agricultural colleges affiliated with universities enable their students to take advantage of an enlarged curriculum. The outstanding fact, however, is that the non-agricultural colleges are supplying the Department with increasing numbers and percentages of its staff; and the State universities with affiliated agricultural colleges, may be offering agricultural students an opportunity to take non-technical subjects.

## Judgments as to an Ideal Curriculum for Preparing for a Career in Agriculture

In answer to two further questions, the 1000 staff members of the Department expressed their judgments regarding the ideal curriculum which their hindsight would recommend to the foresight of young people contemplating a career in the Department of Agriculture. These two questions were: What courses best fitted you for your work in the Department? And what courses, which you did not take, do you wish you had taken? Unfortunately the answers combined the two questions, but this merely accentuates the very broad and general character of the analysis which is to follow. For we are now dealing with expressions of opinion and not statements of fact, and any attempts at accurate measurements of such opinions could not be made. Furthermore, the replies merely listed the various subjects without weighting them, hence the tabulation of the replies merely recorded the frequency with which the various subjects were mentioned. In order to avoid giving more weight to each subject included in a reply listing ten subjects than to one listing only two, each reply

was given a weight of 100 percent, and each subject mentioned was then given its fractional share of this 100 percent. Thus, each of the ten subjects, mentioned in the first reply above, was given 10 percent; and each of the two subjects mentioned in the second reply was given a weight of 50 percent. Obviously, the grossness of the judgments as well as of the method of handling them, prevented accurate measurements. And the definite figures which are to follow should be interpreted only as gross approximations.

The most conspicuous result of this survey was the generally expressed opinion that less time should be given to practical agricultural subjects and more time to fundamental natural sciences, social studies, foreign languages and other subjects to be mentioned later. Not only was this opinion registered in the listing of helpful and desirable courses, but a great number of the replies specifically mentioned this general preference. This raises a fundamental issue, and our agricultural colleges may well ponder it carefully. It would seem to be obvious that agricultural colleges should include mostly agricultural subjects in their curricula, in line with the curricula of other professional schools. But here is evidence to the contrary. If the rejoinder is made that only a few of the graduates of agricultural colleges can find work in the Department of Agriculture, the point must not be lost sight of that the expected turn-over of staff positions in the Department is becoming relatively large as a ratio of the graduates of the four-year courses of our colleges of agriculture; and the question may be raised, What does become of these young folks who graduate from our agricultural colleges? No serious study has ever been made of this problem on a nation-wide scale, but observations would indicate that a surprisingly small number go back to farming. Indeed, the total number of graduates of our agricultural colleges is surprisingly small anyway and it may well be that a considerable percentage do get into Department or closely related activities: in which case, these 1000 replies would become highly significant. Thus, during the past five or six years, the average enrollment in the regular four-year course of some 50 agricultural colleges has totaled approximately 16,000; of this number, some 2700 have been enrolled in the graduating classes of these colleges. It is not an exaggeration to say that a considerable portion of these young folks are potential candidates for positions in the Department and other public agricultural agencies. Hence there would be some point to organizing the four-year curriculum of these agricultural students, at least in part, along the lines indicated by the replies to the questionnaire.

There is, admittedly, a practical side to the issue. A great many students attend our agricultural colleges less than four years; this is true for many extension, adult, summer and "short-course" students. Furthermore, the mortality of those attending the regular four-year course is heavy, and those who drop out would probably be most benefitted by practical agricultural courses while they are in college. Thus, 48 of the agricultural colleges which supplied enrollment figures on this point, reported an average total enrollment of some 6,000 first-year students; for the second year, 4000 students; and for the third year, 3000 students. Inasmuch as the fourth year showed an enrollment of some 2700 students, the chief mortality occurs after the first and second

years. By placing most of the practical subjects in those two years, agricultural education would perhaps be best fitted for those students who, for economic or other reasons, cannot remain longer. This would mean that the attention of the agricultural-college administrations could then be directed toward developing a curriculum, for its four-year students, which would emphasize in the last two years the broader social and more fundamental scientific subjects. But even this apparently practical suggestion may be questioned. In some agricultural colleges, such as Florida, just the reverse is the newly adopted policy; all agricultural students are required to take, in their first year, the same general courses that are required of all university students, among which also are of course to be found the liberal-arts and pre-professional students. It remains to be seen which of these fundamentally opposed principles of curriculum making will prevail.

Both of these developments, however, can be made to conform to the opinions expressed by Department staff members as regards the more beneficial and more desirable courses in the agricultural curriculum. These opinions will now be analyzed further, with reference to groups of bureaus in the Department. In AAA and BAE, the replies placed chief emphasis on Economics, Other Social Studies, and Mathematics including Statistics, these three fields together being weighted as equivalent to three-fifths of the entire four-year course; Agricultural Subjects, and Literature and Foreign Languages, were given approximately equal weight and together constituted another one-fifth. In the group consisting of the bureaus of Animal Industry, Dairy Industry, and Biological Survey, chief weight (one-fifth) was given to the Biological Sciences; followed closely by Chemistry, Literature and Foreign Language, and Mathematics including Statistics, these last three being given approximately equal weights and totaling two-fifths of the curriculum. In the bureaus of Chemistry and Soils, and Soil Conservation, Chemistry was given a weight of one-fifth of the four year course, with Foreign Languages and Literature a close second; and then a general distribution, chiefly among Mathematics and Statistics, Physics, Biology, Agriculture, and Engineering. In the group consisting of the bureaus of Plant Industry, Entomology and Plant Quarantine, and Food and Drug, Chemistry and Biology were given a weight of one-fifth each, with Literature and Foreign Languages, Mathematics including Statistics, and Physics following in that order. In the group consisting of Engineering, Public Roads, Forestry, and the Weather Bureau, Engineering, and Mathematics and Statistics, were weighted one-fifth each, with one-tenth assigned each to Physics, Literature and Foreign Languages, and Economics.

What is striking about these judgments is not only, as has already been said, their emphasis on the fundamental and "non-practical" subjects, but also the positive emphasis on such subjects as Statistics and Foreign Languages. Furthermore, there was a general agreement, as indicated by written insertions, on the additional need of such courses as Public Administration, Report Writing and Public Speaking. The weight attached

to Economics and to Other Social Subjects each was approximately equal to that attached to the Practical Agricultural Subjects. And, with few exceptions, these judgments were closely approximated by the judgments similarly expressed by some 120 bureau and division chiefs of the Department, who were also sent questionnaires. Separate bureaus varied in their judgments from those of the groups of bureaus here reported, and the rank-and-file staff members differed from each other and from their bureau chiefs. But the general expressions of opinion are sufficiently clear to indicate the need, on the part of agricultural-college administrators and staffs, to scrutinize their curricula carefully if these are to be organized for preparing students for a career in agricultural administration.

## Agricultural College Curricula

If we regard these expressions of opinion as in some sense indicative of the desirable objectives of curriculum building, especially as regards those students who are looking forward to a career in the Department of Agriculture, how do the actual curricula of our agricultural colleges compare with the judgments of the staff members of the Department of Agriculture? In order to make some approach to answering this question, an analysis of agricultural college curricula was made, first by examining the courses listed in the 50 college catalogs which were available. Several difficultues in attempting to tabulate these analyses appeared at the very start of the study. The curricula of colleges of States in various parts of the country varied considerably, as was to be expected, because of obvious attempts to meet the subject-matter problems peculiar to different agricultural regions; and the colleges varied considerably as regards the diversity of courses which were offered. Consequently, any summing up or averaging of these diverse curricula would give a neutral or meaningless result. Some colleges offer a standard curriculum which is followed by most students; some offer half a dozen or more types of curricula, and these had to be weighted according to enrollment in attempting to formulate a general distribution of courses; and some college authorities stated specifically that no general curriculum was followed, courses being elected by students to suit individual needs wherever possible. These and other difficulties were at least partly cleared up by correspondence, however.

Another type of difficulty was presented by the fact that courses which made up considerable portions of the standard curricula were listed as "Electives," approximately one-third of the credits required for graduation being so listed. Through correspondence it was discovered that many of these "Electives" were choices among several lists of rigorously prescribed courses; and a considerable portion of these courses were discovered to be practical agricultural courses. Many courses listed as "electives," therefore, were actually required practical agricultural courses, by virtue of the limited choice they offered to the student. This difficulty was partly overcome, first by weighting the listed "Required" subjects with reference to the enrollments of students in the years when the work was required; the registrars of the various colleges

were then asked to give actual or estimated figures of the enrollments in the "elective" courses which were actually chosen by students, and these types of courses were then weighted so as to be commensurable with the weights given the "required" courses. Percentages were then calculated which gave a rough approximation to the amount of student enrollment in the major types of courses listed by our agricultural colleges--fundamental sciences, practical agricultural courses, and others. This gave us a picture of the subject-matter preparation now actually going on in the Land-grant colleges.

"Electives", as we have said, constituted approximately 30% of the courses now being listed in the agricultural-college catalogs. Practical agricultural subjects, specifically listed as "required", constituted an additional 30%. Of the remaining 40 percent of the curriculum, biological sciences accounted for 12%; chemistry, for 9%; English and literature, 7%; economics, 5%; mathematics, statistics, and physics, 5%. These are gross averages for all the 50 colleges, without any weighting to account for differences in the size of enrollment. In other words, the generalized curriculum consisted of about one-third, "electives"; one-third, practical agricultural subjects; one-fourth, basic natural sciences; and about one-seventh, economics, other social studies, and English and literature. Practically no foreign languages are listed in the curricula of our agricultural colleges. This general picture, is, let it be remembered, a composite, from which the individual college curricula may vary considerably; but it must also be remembered that these various deviations cancel each other in the average, hence any factors which are discoverable in the general picture are apt to be exaggerated in certain particular curricula. Interestingly enough, if we consider only the 12 larger colleges of agriculture, with a total enrollment equal to about one-half the total enrollment of all the agricultural colleges of the country, the percentages are almost identical with those already given.

The registrars of 26 of these colleges were able to give us sufficiently accurate figures or estimates as to enrollments in "elective" courses, so as to enable us to calculate the percentage enrollment in the three broader categories of subjects: natural sciences, practical agricultural subjects, and "other," including social studies and literature. No attempt was made to break down these analyses into particular courses or subject matters, because the distribution among these broader groupings presents the primary issue. Two comparisons now have to be made. In the first place, disregarding "electives," and confining ourselves solely to "required" courses, what was the distribution of enrollment among these three groups of subjects (a) in all 50 colleges, and (b) in the 26 colleges for which more detailed data were available; this comparison would determine how fair a sample the 26 colleges -- 6 "larger" and 20 "smaller", and well distributed geographically -- were of all the agricultural colleges of the country. After making this comparison, it was seen that there was very little difference in the two apportionments. The 26 colleges reported an enrollment in the natural-science courses of some 3 percent more than the average for all 50 colleges; some 2 percent less, in the practical agricultural subjects; and some 1 percent less in

the social and literaty subjects. These differences amount to less than one full-year course in a four-year curriculum and can, therefore, be disregarded. The more detailed data of the 26 colleges, therefore, constituted a representative sample of what probably is the situation in all of the agricultural colleges in the country.

After the data regarding choice of electives in the 26 colleges had been analyzed, it was discovered that the factor of "electives", which had been recognized in the preliminary analysis of all curricula as a relatively large factor (some 30 percent), was even more important as the item was followed out into its actual meaning. For, whereas among subjects listed by these 26 colleges as "required", practical agricultural courses constituted some 43 percent of the required work; after the "electives" had been taken into account, these practical courses constituted almost 48 percent of all courses in the curriculum. The increase was not only in percentage, but also and even greater in absolute amount. (And the term "courses" here now means as weighted according to the number of students enrolled in them.) Social and literary subjects also increased from 19.5 percent of "required" courses to 21.5 percent of all courses, and therefore also even more in absolute amount. But the natural sciences decreased from some 37 percent of "required" courses to less than 31 percent of all courses; which meant practically no increase in absolute amount of courses. In other words, those who administered the agricultural college curricula may learn from these figures with practical certainty that the only courses in the basic natural sciences which agricultural students are likely to take are those which are on the required list. The administrators also may see that most of the "electives" will be chosen from among the practical agricultural subjects, although there will be some increase over the "required" percentage of social and literary subjects. Here, again, the various colleges differ considerably from the average. Whether the percentage distribution of the average curriculum is desirable or defensible, we have as yet not discussed. And we shall not attempt to evaluate the individual curricular deviations from these average figures, for any such evaluation will rest fundamentally on the general view one holds as regards the relative importance of the various subject matter courses.

But if we recall the judgments of the 1000 staff members of the Department, and those of the 125 bureau and division chiefs, it would seem that the curricula of the agricultural colleges are in need of modification if they are properly to prepare men for administrative and technical positions in the Department. One such modification would seem to be to increase the amount of work in the basic natural sciences; i.e., mathematics and statistics. Physics, chemistry, and the biological sciences, including zoology, botany, microbiology, entomology, and plant and animal pathology. And the likelihood is that, from the empirical evidence as to "elective" choices, any such curricular modification would have to be made largely by additional "requirements" of courses in these fields. A second modification would be the introduction of more foreign languages in the curriculum, probably as "required" courses for those who expect to go into technical or administrative work; the difficulties here are as apparent as they are great: the need of adding more staff members

to the faculties; the uncertainty in determining what a student eventually will, let alone hopes, to do, and an already overcrowded curriculum. A third possible modification would consist in introducing a course in public administration, combining social philosophy, and psychology, political science, sociology and history, adding elements of social organization and personnel, and including certain economic problems without too much duplicating the work done in courses in that subject. A fourth modification would be to develop work in report writing and public speaking, to train men and women in the use of these effective administrative tools; and such work might well be integrated with the work connected with a course in public administration.

## Broader Professional and Educational Consideration

The primary question which arises in the mind of the educator is, How can these subjects be included in an already overcrowded curriculum? The brutal answer which will pose the issue is, At the expense of the practical agricultural subjects. This is, as a matter of fact, the answer of many persons who received their education in agricultural colleges, and who were expressing their judgments as to advisable courses in preparation for a career in the Department of Agriculture. But the extremeness of the answer may be considerably modified by qualifying remarks. In the first place, many of the so-called "practical" agricultural subjects are taught in such a way as to develop in the student a better sense of fundamental science than is actually accomplished in courses devoted to so-called "pure" science. Our study deals with subject matter and not with methods, and has no bearing on this important point. The situation in each college can be discovered and dealt with concretely, therefore, only by the particular administrator in each college. In the second place, the suggested curricular modifications, especially in the social sciences, can be effected largely, if not wholly, by an internal reorganization of a scattering of courses, many of which are of trivial account as given, and by utilizing to better advantage the time now spent on them. In the third place, more careful attention to the planning of their curricula by and for particular students will obviate the necessity of general curricular changes, especially if the individual is of superior quality, knows what he is after, and can be given special attention. But, even after these and other qualifications have been made, the blunt fact remains that the effecting of these desirable curricular changes will probably have to be done largely at the expense of the present enrollments in practical agricultural courses. And an examination of the multiplicity of this type of course in almost any agricultural college curriculum would warrant the observation that a considerable number of such courses could be combined or eliminated with profit.

There still remains the problem of the time when these various types of courses would best be given; more particularly, whether basic courses should be given, as seems logically desirable, in the earlier years of the college. In Florida and Louisiana, this problem has been approached from one point of view; the decision has been that the first

year of the agricultural work of a student shall be identical with that of all students in the university, namely, a set of liberal-arts courses, including the fundamental sciences. Inasmuch as most of our professional students -- in law, medicine, engineering, teaching, etc. -- seldom have more than two years of such prerequisite college work, and often only that much, it would seem that these two agricultural institutions are achieving a relatively high level of educational standards for training men and women for a career in agriculture. A realization of the practical situation facing an institution like the Vermont Agricultural College, however, where many students have difficulty in attending for more than two years, makes one sympathetic with the opposite plan which includes the teaching of the practical courses in the first two years and which reserves the broader and more fundamental work for those who can afford to attend the college all four years. And Vermont, let it be noted, is the first agricultural college in the country to include in its curriculum a course of Philosophy, which is oriented to the problem of agricultural planning, a required course for all fourth-year students.

Whether it is necessary to decide upon one of these two radically different educational philosophies, is questionable. One possible compromise might be to include most of the fundamental work in science in in the first two years -- especially biology, chemistry, and mathematics and statistics -- and then to make provision for broadening the curriculum during the last two years, especially by emphasizing, more than is done at present, the courses in public administration, economics, and foreign languages. Certain evidence from the Florida experience would warrant giving serious consideration, however, to the requirement of a year or more of liberal-arts college work for prospective agricultural-college students. Prior to this requirement in Florida, many students, forced to choose a special college at entrance, found themselves misplaced and shifted over to other colleges; the year of general education gives the student a better chance to find himself. The mortality in Florida at the end of the second year is still approximately the same as it was before, but it now occurs largely among the lower-grade students. Not only are more students of higher quality retained, but those students who do leave, do so with a certificate and with a better attitude toward the college than they did in the past. And the whole issue is again brought to the fore by those administrative officers and teachers of the Florida college, who assert that even those students who leave at the end of the first or second year are better off as rural citizens for having had a more generalized course. In any case, just where these broader subjects might be introduced into the agricultural curriculum -- whether at the beginning of the work, or somewhere else -- is of subordinate consideration to the proposal that they be made somewhere and somehow.

It may be well, in conclusion, to point out certain other broader phases of the enquiry. For the problem of the curriculum of the agricultural college is a part of the whole problem of education, including not only other professional schools but also the elementary and secondary school system. As an example of what we mean, let us refer to President Roosevelt's letter of October, 1936, to the presidents and deans of

engineering schools, suggesting that more stress might be laid in engineering education on the social implications of the profession. Some of the presidents and deans, conspicuously Mr. Harvey Davis, of Stevens Institute of Technology, replied in commendatory terms; others were not so favorably inclined. Among the latter, one dean said, "Of what use is it to teach our students the social implications of engineering if their buildings fall down?" To which it might be replied that Spanish architects and engineers have been exceedingly well trained in their professions, and their buildings were well built; but the buildings have been falling down, nevertheless, partly because the Spanish people -- including the engineers -- have unfortunately not been educated -- and this term need not be formally defined -- sufficiently along social lines. The Report on American Medicine, issued April 7, 1937, initiated a movement which has rapidly expanded and which shows a definite purpose on the part of this profession to follow up the Report of the Committee on Medical Care in its endeavor to take professional cognizance of the social changes of recent years and to fit medical education to the broader functions now demanded of the profession. It might be well, therefore, for the agricultural colleges similarly to enquire into the aptness and adequacy of their curricula for training farm leaders and those who are to determine future State, regional and national agricultural policies and to administer them.

Another angle of the situation is presented by the very general, and almost universal, opinion expressed by the staff members of the Department as to the desirability and necessity of a more thorough grounding in modern foreign languages. To discover, as we have, that foreign languages are practically not taught in our agricultural colleges, does not mean that the colleges necessarily should expand or complicate their curricula by including these subjects; this may be a function of the elementary and high schools. Similarly with the teaching of English: the expressed need, among Department staff members, of better training in report writing and public speaking, and the very general criticisms of the literary taste and diction of the products of our educational system, may best be met by a better system of pre-agricultural education. It may also be met, however, by a thorough revamping of such courses as are already included in the agricultural curriculum, to effect not only a cultivated taste for literature, but also and more especially a training in the better instrumental use of the English language. Considerable improvements in our agricultural curricula may be possible, therefore, especially along the line of these "tool" subjects, without introducing complications by trying to insert additional courses in an already over-crowded curriculum. And the burden of this task, and its responsibility, may well be shared with primary and secondary education.

It does appear, however, from an analysis of existing agricultural curricula, that some of the time spent in practical agricultural subjects could possibly be allocated to courses of a broader type. We have already stated the case for more work in the fundamental sciences. This judgment represents the consensus of the Department staff and has been an increasing concern of leaders in agricultural education. So, also, in the matter of broadening the curriculum along other lines. This we have also referred

to above, but we wish to repeat our remarks for the sake of emphasis. One such course could be entitled Problems of Agricultural Administration, in which due attention could be paid to the broader phases of social theory and philosophy, national agricultural policy, and international and regional problems. Some agricultural colleges have "survey" courses, others have courses in social fields other than economics; inasmuch as these courses are frequently regarded as "weak sisters" of the curriculum, it may be that the problem could be met by reorganizing and amplifying this work rather than by the introduction of new courses. Another such broader course could consist of a History and Philosophy of Science, especially treated so as to link up the work of agricultural research activities with the fundamental logical bases and social implications of theoretical science. That the problem is not a simple one is indicated by the care with which Harvard University is approaching it (President's Report for 1935-36, page 6). It may be that such a study could best be introduced by first organizing a seminar group consisting only of the staff members of the college. But, in the main, and aside from practical or detailed considerations, the question is raised here whether courses of a broader type might not be so developed as to supplant at least a small part of the curriculum now devoted so largely to practical and applied agriculture.

Another important, and final, consideration to be made in this connection is this: Are such proposed curricular adjustments justified by the type of job which young people so prepared could obtain? What opportunities are available to young men and women who contemplate a career in agricultural administration? Are the sacrifices entailed in a four-year college course, and especially with a partially "non-practical" curriculum developed along the broader lines here suggested, at all commensurate with the rewards? What, practically, is the outlook in available jobs? These questions can be answered only partly. They do raise problems, however, which our agricultural colleges may well face. What, for example, we again repeat, becomes of the graduates of these colleges? A survey of the graduates of the past 10 or 15 years would be most enlightening. From general observations and comments it can safely be predicted that such a survey would disclose the fact that a surprisingly small number of these graduates engage in farming; and yet it was the purpose of the Land-Grant College Act to train young people for farming and technological work, and this is still generally advanced as a reason for public appropriations to support the agricultural colleges. A considerable number of these graduates go into some form of private business -- insurance, commission houses, cooperatives, manufacturing, marketing, etc. -- where their knowledge of practical agriculture is an asset, but where other subject matter might have prepared them better. Disregarding the number of agricultural graduates who enter non-agricultural activities, the number who could secure positions in the Agricultural Colleges and the Department of Agriculture as staff members is large in proportion to the number enrolled in our agricultural colleges. The professional advantages here held out to the better type of student would alone seem to tax the capacity of our agricultural colleges. It is not surprising to discover, therefore, that the non-

agricultural colleges are supplying a considerable number of persons for these positions, especially when we take into account the broader functions for which these persons need to be trained.

When we enquire as to the salaries which these positions entail, the figures are difficult to assemble. It may be mentioned, however, that facilities for research work, while never ideal, are relatively good in the laboratories and libraries of the Colleges and the Department, and the field work offers administrative opportunities of the broadest type. These amenities of college staff work must be taken into consideration. But what of the salary outlook? A recent survey of some 600 of the older staff members of the Department of Agriculture disclosed some interesting facts. These people have had 25 years or more of service in agricultural administrative and scientific work; almost two-thirds of them, 64%, to be exact, are drawing salaries of $4600 or more. 47% are in the $4600-$5600 salary group; 11% in the $5800-$6400 group; and 6% draw salaries ranging from $6500 to $9000. Some 12% range from $3700 to $4400; some 16% from $3200 to $3600; and some 8% have salaries less than $3200. These salaries compare very favorably with those of our largest universities. There is no appreciable difference in average salary scale as service increases beyond 25 years, although there is an appreciable decline in the number of persons receiving from $4600 to $5600 as the number of years of service increases. Inasmuch as $4600 is the average and mean salary for the entire group of 575 persons on the Department staff with a record of 25 or more years of service, this figure may be regarded as a practicable objective of those persons who are confident of their ability and desire to enter a successful career in agricultural administration and scientific work.

This Report is respectfully submitted as a preliminary and experimental survey of the possibilities of college training for a career in the Department of Agriculture. As was stated before, a similar survey is now in process as regards the field staff of the Extension Service. And it may be that the Agricultural Colleges could be encouraged to make a similar survey regarding their own research, teaching and administrative staffs.